

TITLE: ADJUSTABLE PUMP ASSEMBLY WITH SINGLE MOTOR AND MULTIPLE PUMPS

5 BACKGROUND OF THE INVENTION

Pumps are used in many industries to convey fluid from one location to another. For example, in the coating industry, spray nozzles connected to pumps apply various solutions to products. Generally, if more than one type of solution is to be applied to a product, separate pumps are normally provided, each with its own separate drive motor, 10 controls, and cabinet or cart. This prior art system with dual components is expensive and utilizes valuable floor space in the coating room.

Therefore, a primary objective of the present invention is a provision of an improved pump assembly using a single motor with multiple pumps.

Another objective of the present invention is the provision of an improved pump 15 assembly for a coating room which mounts on a wall so as to increase usable floor space.

A further objective of the present invention is the provision of a method for changing a pump assembly from a first pump to a second pump, both utilizing a single motor.

Yet another objective of the present invention is the provision of a pump assembly 20 which is economical to manufacture and durable and efficient in use.

These and other objectives will become apparent from the following description of the invention.

BRIEF SUMMARY OF THE INVENTION

25 A pump assembly is provided with a motor mounted on a base plate, and a drive gear extending from the motor. A pump plate is adjustably connected to the base plate and is moveable between first and second positions relative to the base plate. A first pump is mounted on the pump plate and has a gear in mesh with the motor gear when the pump plate is in the first position. A second pump is mounted on the pump plate and has a gear 30 in mesh with the motor gear when the pump is in the second position. The first and second pumps are disengaged from the motor gear when the pump plate is in the second and first positions, respectively. The base plate may be mounted on a wall or on a portable cabinet or cart.

In the method of the present invention, the pump assembly is quickly and easily changed from the first pump to the second pump by moving the pump plate to the desired first or second position so as to engage the proper pump with the motor drive gear. The pump plate can be fixed in position on the base plate by one or more knobs which can be
5 quickly and easily tightened by hand.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an exploded perspective view of the pump assembly of the present invention, showing examples of different pumps which can be utilized.

10 Figures 2 and 3 are schematic views showing the pump plate in first and second positions, respectively, relative to the base plate.

Figure 4 is a side elevation view showing the assembled pump assembly mounted on a wall or cart.

15 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

The pump assembly 10 of the present invention includes a drive motor 12 having an output shaft with a drive gear 14 thereon. An optional reducer 16 may be provided for the motor 12. The motor 12 and reducer 16 are mounted on a support shelf 18 which is part of a base plate 20.

20 The pump assembly 10 also includes a plurality of pumps mounted upon a pump plate 22. For example, a gear pump 24 and a series of peristaltic pumps 26A, B, C, D are mounted to the pump plate 22 in a convenient fashion. The gear pump 24 includes a gear 28 on the opposite side of the pump plate 22, and the peristaltic pumps 26A-D include a gear 30 mounted in a bracket or yoke 32 via a shaft 31 and bushings 33 on the opposite side
25 of the pump plate 22.

The base plate 20 includes a plurality of threaded studs 34 which are adapted to extend through slots 36 on the pump plate 22. Thumbnuts 38 tighten on the studs 34 so as to lock the pump plate 22 in position on the base plate 20. The pump plate 22 may be secured to the base plate 20 in any other convenient manner that allows for quick and easy
30 adjustment of the plate 22. For example, over-center cam levers or other fasteners may be used.

When the thumbnuts 38 are loosened, the pump plate 22 may be moved or adjusted between first and second positions relative to the base plate 20. In the first position, shown in Figure 2, the gear 28 of the pump 24 is in mesh with the motor gear 14, and the gear 30 of the pumps 26A-D is disengaged from the motor gear 14. In the second position of the 5 pump plate 22, shown in Figure 3, the gear 28 of the pump 24 is disengaged from the motor gear 14 and the gear 30 of the pumps 26A-D is in mesh with the motor gear 14. Thus, in the first position of the pump plate 22, the gear pump 24 is driven by the motor 12, and the pumps 26A-D are inoperative. In the second position of the pump plate 22, the peristaltic pumps 26A-D are operative and the gear pump 24 is inoperative. Changing between the 10 pump 24 and the pumps 26A-D is achieved quickly and easily simply by loosening the thumbnuts 38, moving the pump plate 22 to the desired position, and tightening the thumbnuts 38.

The pump assembly 10 may be mounted on a wall 40 or on a portable cart. For example, on a wall mount application for a spray coating room, the base plate 20 is 15 mounted on the wall 40, with the shelf 18 extending through the wall 40 such that the motor 12 is behind the wall. The pump plate 22 with pumps 24 and 26A-D are mounted to the base plate 20 so as to be in the coating room. An operator can select the desired pump 24 or 26A-D and adjust the position of the pump plate 22 relative to the base plate 20 so that the single motor 12 will drive the selected pump. The pumps 24 and 26A-D are 20 operatively connected to sources of fluids to pumped, such that, for example, a first solution can be sprayed onto a product via pump 24 and then a second solution can be sprayed on the product via pumps 26A-D, merely by loosening the nuts 38, shifting the position of the pump plate 22 and tightening the nuts 38.

It is understood that any types of pumps may be mounted on the pump plate 22 and 25 any mix of pumps may be utilized, such as two peristaltic pumps of different capacities or two different sized gear pumps. Also, the speed of each pump may be controlled by an external electrical frequency control unit (not shown). The pump plate 22 can be removed from the base plate 20 so that the pumps can be removed for cleaning, or other pumps installed, while the motor 12 and reducer 16 remain fixed to either the wall or the portable 30 cabinet.

The invention has been shown and described above with the preferred embodiments, and it is understood that many modifications, substitutions, and additions may be made which are within the intended spirit and scope of the invention. From the foregoing, it can be seen that the present invention accomplishes at least all of its stated
5 objectives.